

The 2-6 bristles perfectly smooth or rarely slightly roughened, 0.5-2 mm. long, mostly shorter than the chestnut-brown achene.—MAINE: border of salt-marsh, Back River Creek, Woolwich, Sept. 15, 1916, *Fernald & Long*, no. 12830; tidal mud-flats of the Cathance River, Bowdoinham, Sept. 14 & 19, 1916. *Fernald & Long*, no. 12829; Brunswick, Aug. 6, 1894, *C. A. Davis*; muddy bank of the Androscoggin River, Brunswick, Sept. 15, 1904, *Kate Furbish*; tidal flats of the Cathance River at Bowdoinham and at its mouth in Merry-meeting Bay, Aug. 25-Sept. 2, 1920, *Fassett* (TYPE in Gray Herb.).

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EQUISETUM FLUVIATILE OR *E. LIMOSUM* ?

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FOR nearly fifty years before the publication, in 1893, of the *List of Pteridophyta and Spermatophyta of Northeastern North America*, the common horsetail of our marshes and river-shores was universally known to American botanists as *Equisetum limosum* L. In that work, the first attempt to apply the provisions of the American Code, the name *E. fluviatile* was substituted. This change was made because the species, as now and for more than a century understood, includes both *E. limosum* and *E. fluviatile* of Linnaeus and of the two names, published on the same page of the *Species Plantarum*, the latter has priority of position and had to be taken up under Canon 13 of the American Code. A. A. Eaton adopted it in his treatment of the North American Equiseta in the Fern Bulletin and in the seventh edition of Gray's *Manual*; and it is now nearly as generally used in America as was its predecessor twenty years ago. In Europe, however, the great majority of authors have retained *E. limosum*. This circumstance and the further fact that the International Rules do not admit priority of position in cases where two groups of the same rank, published at the same time, are united, but require the retention of that one of the two names chosen by the author who first suggests the union, raise the question whether, after all, *E. fluviatile* is the correct name.

In order to answer this question satisfactorily, it is necessary to consider in some detail the nomenclatorial history of the species. *E. fluviatile* first appears in the *Flora Lapponica*, 310 (1737). Its identity is fixed by the existence in Linnaeus' herbarium of a speci-

men in his possession in 1753 and labelled by him with the descriptive phrase assigned to *E. fluviatile* in the *Species Plantarum*.¹ To this Linnaeus added in the *Flora Suecica*, 305 (1745) another species, "Equisetum caule nudo laevi." He retained both in the *Species Plantarum*, giving to the latter the specific name *limosum*. This treatment seems to have been generally accepted by European authors for some thirty years, the name *fluviatile*, however, being often applied to *E. Telmateia* Ehrh., an error which Linnaeus had made possible by citing under *E. fluviatile* synonyms from Bauhin and Haller applicable to *E. Telmateia*. Ehrhart in 1783² clearly pointed out that *E. fluviatile* and *E. limosum* of Linnaeus were branched and unbranched forms of the same species and formally united them, unfortunately, however, giving to the aggregate the new and wholly needless name *E. Heleocharis*. Ehrhart's union of *E. limosum* and the real *E. fluviatile* has been accepted by the majority of authors since,³ though the name *fluviatile* long continued to be applied in various works⁴ to *E. Telmateia*. Roth in 1800 (*Tent. Fl. Germ.* iii. 9) correctly united the two under the name *E. limosum*, citing as synonyms *E. fluviatile* and *E. Heleocharis*, though, curiously, he took the branched form as typical and made a varietal name for the true typical form. A few authors, especially among the Scandinavians, have employed the name *E. fluviatile* for the united species, but G. F. W. Meyer, in 1836,⁵ seems to have been the first formally to reduce *E. limosum* to varietal status under it.

It appears, then, that Roth was the first to unite *E. limosum* and *E. fluviatile* under a tenable name and that, according to the International Rules, the name which he chose, *E. limosum*, must stand.

As stated by Eaton⁶ there appear to be no true varieties of this species in America. Its variants, though often striking in aspect, not only intergrade freely, but occur commonly in the same colonies throughout a similar range and sometimes even on the same rootstock. Meyer and Milde considered the simple and branched forms as seasonal states or due to the depth of water in which they happened

¹ Fide Vaucher, *Monog. des Prêles*, 45 (1822); Milde, *Monog. Equiset.* 256 (1865); Jackson, *Index to the Linnean Herb. Proc. Linn. Soc.*, no. 124, Suppl. 72 (1912).

² *Hannov. Mag.* (1783), Stueck 18, 286, according to Roth, *Beitr.*, ii. 158 (1788).

³ See, for instance, Schkuhr, *Krypt. Gew.* t. 171 (1809) where both are figured on the same plate under the name *E. limosum*.

⁴ Milde, *Monog. Equiset.* 257 (1865) gives a long list of them.

⁵ *Chloris Hanov.* 668 (1836).

⁶ *Fern Bull.*, x. 73 (1902).

to grow: here, however, both may develop side by side. The plant here treated as f. *minus* seems at first sight to have varietal characters. But these characters re-appear in basal branches of typical *E. limosum*; and Eaton, in a note on one of the sheets in the herbarium of the New England Botanical Club, states that he has observed this form to be produced where a freshet had deposited sand on a bed of typical plants and that, after some years, it reverted to the typical form. It seems best, therefore, to consider it as a reduced ecological state of *E. limosum*.

The more striking forms, which seem to deserve some recognition, are given, with their synonymy, below.

Culms simple or merely with a few solitary or scattered, commonly long and strongly ascending branches.

Culms stout, 3.5–7.5 mm. in diameter in dried material; sheaths of mature primary culms usually closely appressed, their linear-lanceolate teeth mostly over 2 mm. long and black for their whole length. 1. *E. limosum*.

Culms slender, 1.5–3 mm. in diameter in dried material; sheaths usually rather loose, their teeth deltoid-lanceolate, mostly less than 2 mm. long and black only in the upper half. 2. f. *minus*.

Culms with definite whorls of 4–16 slender ascending or spreading branches from the median and upper nodes.

Branches sterile. 3. f. *verticillatum*.

Branches, or some of them, bearing strobiles at their apices. 4. f. *polystachium*.

1. *EQUISETUM LIMOSUM* L. Sp. Pl. 1062 (1753). *E. Heleocharis* Ehrh. Hannov. Mag. (1783) Stueck 18, 286, acc. to Roth, Beitr. ii. 158 (1788). *E. limosum* β . *aphyllum* Roth, Tent. Fl. Germ. iii. 9 (1800). *E. fluviatile*, "Spielart" α . *praecox* G. F. W. Mey. Chloris Hanov. 668 (1836). *E. fluviatile simplex* Rupr. Symb. 92 (1845). *E. fluviatile** *limosum* Hartm. Skand. Fl. ed. 5, 216 (1849). *E. limosum* α . *genuinum* Gren. & Godr. Fl. Fr. iii. 644 (1855). *E. limosum*, f. *Linnaeanum* Doell, Fl. Baden, 64 (1857). *E. limosum*, var. *simplex* Milde, Gefaess-Crypt. Schlesiens, 448 (1858). *E. limosum*, var. *Linnaeanum* Milde, Monog. Equiset. 342 (1865). *E. fluviatile* β . *limosum* Hartm. Skand. Fl. ed. 11, 548 (1879). *E. Heleocharis*, f. *limosum* Klinge, Arch. Naturf. Soc. Dorpat, Ser. 2, viii. 410 (1882). *E. Heleocharis*, *B. limosum* Aschers. & Graebn. Syn. Mitteleur. Fl. i. 136 (1896).—Labrador to Alaska, so. to New York, Indiana, Illinois, Wyoming and Washington.

2. *FORMA MINUS* A. Br. in Doell, Rhein. Fl. 30 (1843).¹ *E. uliginosum* Muhl. in Willd. Sp. Pl. v. 4 (1810). *E. limosum* β . *minus* A. Br. Am. Journ. Sci. xlv. 86 (1844). *E. limosum*, var. *uliginosum* Milde, Monog. Equiset. 343 (1865). *E. Heleocharis*, f. *uliginosum*

¹ The form is here published without author citation as if it were Doell's own; but in the Fl. Baden he attributes it to Braun.

Klinge, Arch. Naturf. Soc. Dorpat, ser. 2, viii. 411 (1882). *E. Heleocharis*, *B. limosum*, f. *uliginosum* Aschers. & Graebn. Syn. Mitteleur. Fl. i. 136 (1896). *E. fluviatile*, var. *uliginosum* A. A. Eaton, Fern Bull. x. 73 (1902). *E. limosum*, f. *Linnaeana*, subf. *minor* Dalla Torre & Sarntheim, Fl. Tirol, vi. 74 (1906). *E. limosum* α . *Linnaeanum* sub-var. *minus* Rouy, Fl. Fr. xiv. 500 (1913).—MAINE: springy places, Ft. Kent, June 15, 1898, *Fernald*, no. 2191; gravelly river-bank, Ft. Fairfield, July 7, 1893, *Fernald*, no. 200; sandy shores, Grand Isle, June 20, 1898, *Fernald*, no. 2194; in an old well, Orono, July 6, 1892, *Fernald*; margin of river, Winn, July 10, 1916, *Fernald & Long*, no. 12,315. VERMONT: shore of Winooski River, alt. 270 ft., Essex Junction, 25 July, 1911, *Blake*, no. 2190. MASSACHUSETTS: sandy pools, Amesbury, May 30, 1897, *A. A. Eaton*, no. 47; June, 1902, *A. A. Eaton*, no. 48. ILLINOIS: Chicago, *N. L. T. Nelson*. YUKON: Dawson, June 19, 1914, *Eastwood*, no. 309. Muhlenberg's *E. uliginosum* came from Pennsylvania and Braun cites the form as collected in Newfoundland by La Pylaie.

3. Forma VERTICILLATUM Doell, Fl. Baden, 64 (1857). *E. fluviatile* L. Sp. Pl. 1062 (1753), excl. syn. Hall. and Bauhin. "Afart" *E. limosum fluviatile* Hornem. Dansk Oekonomik Plantelaere, 345 (1837). *E. limosum*, formae *brachycladon* and *leptoclodon* Doell, Rhein. Fl. 30 (1843). *E. limosum* β . *ramosum* Gren. & Godr. Fl. Fr. iii. 644 (1855). *E. limosum*, vars. *verticillatum* and *attenuatum* Milde, Gefaess-Crypt. Schlesiens, 448 (1858). *E. Heleocharis*, 2 *fluviatile* Klinge, Arch. Naturf. Soc. Dorpat, ser. 2, viii. 412 (1882). *E. limosum*, "var. *E. fluviatile*" Baker, Handb. Fern Allies, 4 (1887). *E. Heleocharis*, *A. fluviatile* Aschers. & Graebn. Syn. Mitteleur. Fl. i. 135 (1896). *E. fluviatile*, var. *verticillatum* A. A. Eaton, Fern Bull. x. 73 (1902). *E. limosum*, f. *fluviatilis* (with subformae *brachyclada*, *leptoclada* and *attenuata*) Dalla Torre & Sarntheim, Fl. Tirol, vi. 74 (1906).—Newfoundland to the Yukon, so. to Delaware, Indiana, Wisconsin, Nebraska, Idaho and Oregon.

Although the earliest name in the formal category applied to this plant is f. *brachycladon* Doell, we have felt justified in taking up the earliest formal name applied to the group as we define it. *F. brachycladon* applies only to a single, short-branched phase of our form, hardly worth any recognition; the name, as indicating the contrast between the branched and unbranched forms, is so inappropriate as to be misleading; and it and its companion *leptocladon* were reduced by Doell himself in his Fl. Baden to sub-forms under his f. *verticillatum*. There seems no reason for upsetting his more mature and obviously correct treatment, which has been accepted by practically all subsequent authors.

E. fluviatile intermedium A. A. Eaton in Gilbert, List N. Am. Pterid. 8, 26 (1901) appears, from the scanty material at hand, to be only stunted f. *verticillatum*.

4. Forma POLYSTACHIUM (Brückn.) Doell, Fl. Baden, 65 (1857), where wrongly ascribed to Lejeune, Fl. Spa. ii. 274 (1813). *E. polystachium* Brückn. Fl. Neobrand. Prod. 63 (1803). *E. limosum polystachion* Seringe in Vaucher, Monog. des Prêles, 44 (1822). *E. limosum*, β . *Candelabrum* Hook. Fl. Bor.-Am. ii. 269 (1840). *E. limosum*, γ . *polystachyum* A. Br. Am. Journ. Sci. xlvi. 86 (1844). *E. Heleocharis*, f. *polystachyum* Klinge, Arch. Naturf. Soc. Dorpat, ser. 2, viii. 411 (1882). *E. Heleocharis*, *A. fluviatile*, f. *polystachyum* Aschers. & Graebn. Syn. Mitteleur. Fl. 136 (1896). *E. fluviatile*, var. *polystachyum* A. A. Eaton, Fern Bull. x. 74 (1902). *E. limosum*, f. *fluviatilis*, subf. *polystachya* Dalla Torre & Sarntheim, Fl. Tirol, 74 (1906).—Specimens have been seen from Nova Scotia, Maine and Michigan: there are reports from Manitoba (β . *Candelabrum* Hook.), Oregon (Am. Fern Journ. ix. 104) and Washington (Fern Bull. x. 74).

GRAY HERBARIUM.

HERBARIUM OF REV. W. P. ALCOTT.—On a recent visit to the Peabody Academy of Sciences in Salem I was much pleased to find there the entire herbarium of the late Rev. W. P. Alcott. This is a recent acquisition which is of great value. Mr. Alcott built up a general American collection of a few hundred sheets by collecting and exchange, and he had several other smaller collections from different parts of the world.

Most interesting of all to the local student is Mr. Alcott's collection of wool-waste plants, which he made during his pastorate at North Chelmsford, Massachusetts. There are many references to these plants in Dame & Collins's Flora of Middlesex County (1888). Now that this collection is accessible, practically all the citations in this Flora can be traced to actual specimens. Dr. C. W. Swan's herbarium at Yale University includes many of these Middlesex plants, and the others are in the Gray Herbarium or in that of the New England Botanical Club.—CLARENCE H. KNOWLTON, Hingham, Massachusetts.